

## THE AGRICULTURIST

WE have been favored by a subscriber with the following notes on the subject of Hog-feeding in this country, occasioned by a perusal of an article on that subject which appeared in our Agriculturist's columns last week.

"Few people know or appreciate the benefit of feeding grass to their hogs—as a change from so much dry food. Hogs will not only eat with relish the grass we cut from our gardens—but also most of the weeds pulled up from time to time which are generally thrown into the rubbish pile. This sort of food which costs nothing but the labor, makes a great saving in the feed bill, particularly in our islands, where grain is high. Coal broken up into small pieces and placed in a trough dry, so that they can run at it at will, also assist materially in keeping them healthy. Many large feeders in the States throw down a wagon load in a pile and allow their hogs the run of it. Coal is considered a great authority for the cholera, and ought to be tried here, seeing that this disease carries off so many of our pigs, sometimes clearing out the whole of a man's stock. It is not to be wondered at that the quality of the pork supplied to the markets here is inferior. The Chinamen, from whom the supply comes feed a great deal too much watery and washy food to their hogs. The few people here who really understand the business rear their hogs chiefly for their own use, or that of their particular friends, so that when we buy pork from a butcher, it is all a chance whether it be properly fed or not."

"There is another point in the management of hogs which from my own observation I should say is neglected here. The young stock should be allowed to run loose, or in a good-sized enclosure where such a convenience is obtainable. They will, if so treated, grow quicker and stronger, and will not cost half so much to feed."

TECHNICAL education is recognized to be one of the great needs of the day everywhere, but successful attempts to impart in a manner to yield good practical results are not very numerous. We give below some extracts from an account of one of the attempts which has proved successful, viz., the Michigan State Agricultural College. The account from which our extracts are taken has been communicated to a Melbourne paper by an intelligent observer who has been making a tour of the United States with the special object of taking notes of everything that is to be learnt there in regard to Agricultural and pastoral pursuits. His account of the Michigan Agricultural College is highly interesting because it gives an insight into the methods by which success in technical education may be secured—thoroughness being evidently the guiding principle of the whole.

## AN AGRICULTURAL COLLEGE.

(By a Correspondent of the Melbourne "Argus.")

The Michigan State Agricultural College occupies a leading position among the three or four first-class princely agricultural institutions in the United States, and as I heard it is highly prized among the farmers of the western states, as well as by the conductors of newer colleges met with in the course of my journey, I resolved to pay it a visit. The college is situated on the banks of the Red Cedar River, about three miles from Lansing, upon a farm of 676 acres. Originally the farm was covered with a dense forest. The fields have been cleared, but the buildings are embowered among the oaks, maples, and other beautiful trees, with green lawns and winding roadways, making the undulating site one of the most charming. Instead of one large building there are several neat brick structures detached from each other and surrounded by well-kept grounds, the whole group having an exceedingly attractive appearance. In these buildings the rooms of the students, the apartments of the professors, and the various lecture-halls and laboratories, the botanical laboratory with lecture-hall, professor's study, museum of vegetable products, &c.; the chemical laboratory is completely fitted up with necessary appliances:

the zoological laboratory has its lecture-room, apartment for anatomical study, library, &c.; there is a general museum of mechanical inventions, a small astronomical observatory, and a library of 6000 volumes and over 100 periodicals.

Of the farm of 10 acres are devoted to experiments, 180 acres to the cultivation of field crops, and there are 110 acres of woodland and pasture. Barns, stables, stock-sheds, and pigeries are provided, and the stock kept are shorthorn, Ayrshire, Devon, Hereford, Jersey, Holstein, and Gallopway cattle; merino, Cotswold, and Southdown sheep; Essex, Berkshire, Poland-China, Suffolk swine. There is an apiary with Italian and Syrian bees kept in different kinds of hives and provided with the various kinds of shrubs for food. The green-house, flower garden, botanic garden, orchard, sample grounds for timber trees, hedges, &c., and the arboretum of native and foreign trees are all interesting and instructive departments of the institution. As in addition to engaging in the various departments of farm work the course of study requires the students to observe and experiment under the direction of the teachers, all these branches of the establishment are made use of, imparting a sound education, and giving a practical training to the graduates of the college.

Labor on the farm is one of the most important branches of the college training. The course occupies four years, and the work has to be engaged in throughout each term to the finish. It is calculated that withdrawing a lad from association with agricultural industry and from participation in manual labor at a time when habits are most easily formed, unfits him and disorients him for a farmer's life, and hence the college course is made to resemble, as far as possible, education on the farm. Three hours every day, or from 1 o'clock to 4, are devoted to farm work, the remainder of the time being taken up with study and leisure. The system of teaching, as far as I had an opportunity of observing it, seemed to be an excellent one, being designed to encourage the student to think and enquire; and the laboratories, museum, and the field of nature being made use of no less than books. Degrees of bachelor and master of science are granted to the students who sustain the required examinations; and in addition to the large number of graduates who become practical farmers, many of the teachers of younger institutions received their training at the Michigan Agricultural College. Fully 50 per cent. of the students trained in this institution are said to be engaged in pursuits directly and indirectly connected with agriculture, and this measure of success is mainly attributed to its making agriculture the main feature of its curriculum, and insisting upon the labor clause of its regulations.

Candidates over 15 years of age, upon passing an examination in grammar, geography, arithmetic, reading, and penmanship, are admitted to the college, the average age of students admitted being 19 years; and those who remain for four years and pass the different examinations are granted degrees. There is no charge for instruction but board, books, and other requisites have to be paid for, in addition to an entrance fee of 20s. The annual cost to the student, exclusive of clothes and travelling expenses, does not amount to more than from £20 to £35, and this sum is considerably reduced by the payment received for farm work. Although three hours' work is compulsory, the student receives a small payment, reckoned at so much per hour, which materially reduces his annual expenses. There is also a three months' vacation in winter, which can be employed by students in teaching a school. There are generally from 170 to 180 students in attendance, and when it is considered upon what easy terms an education can be obtained, the popularity of the institution is not to be wondered at. The scope of the college-work may be inferred from the branches already referred to, and it will be understood that the various subjects are only dealt with as far as is necessary to impart a practical education. Under the head of practical agriculture are

embraced general principles of drainage; laying out and construction of drains, drainage and sewage of buildings, breeds of domestic animals—their characters and adaptation to particular purposes—history of agriculture, principles of stock-breeding, farm economy, mixed husbandry, rotation of crops, feeding of animals, management and application of manures, planning and construction of farm buildings, care of farm premises, farm implements, cultivation of farm crops, selling of farm products, farm law, and agricultural literature. Botany receives a large share of attention; and forestry, landscape gardening, and field surveying are important branches. Veterinary science is also dealt with, while agricultural chemistry, zoology, geology, mathematics, grammar, history, political economy, mental philosophy, and logic are also included in the curriculum. Students are allowed to make a choice of subjects, so that each is able to obtain a special training for the business he intends to follow. There is no avoiding of the labor clause, however, for this is regarded of great importance. Professor Abbot, who showed me over the college, is strongly in favor of keeping the students well acquainted with manual labor, and the following clause in the annual catalogue is worthy of consideration by all who study the question of agricultural education:—"The student must, in acquiring a scientific education, lose either the ability or the disposition to the labor on the farm. If the farmers are to be educated they must be educated on the farm itself, and it is due to this large class of our population that facilitates for improvement second to none other in the state should be afforded them. It is believed that the three hours' work that every student is required to perform on the farm or in the garden, besides serving to render him familiar with the use of implements and the principles of agriculture, is sufficient also to preserve habits of manual labor and to foster a taste for agricultural pursuits."

## Miscellaneous Reading

## LUX IN TENEBRIS.

Joy breaks through sorrow, sunshine through the clouds;  
The darkest night is followed by the day;  
Storm ends in calm, earth's trials in the deep  
Unruffled peace of that celestial shore.  
Honolulu, March 19th, 1884. G. W. P.

## "LOVEST THOU ME MORE THAN THESE?"

Lord thrice denied, thrice asking for my love!  
Thou know'st I love Thee—more I dare not say!  
No longer on myself reliant, I  
Feel but the love that knows its source in Thee.  
These have not once denied Thee—I, so full  
Of boasting, ever sure that I  
Would ne'er desert Thee let what'er betide,  
Not once, not twice, but thrice disowned that Name  
Which ever in my heart I held so dear!  
When in Gethsemane I struck the blow  
In thy defence, I little thought that I,  
Thy champion then, so soon would traitor prove!  
I grieve not that Thou thrice shouldst ask for love,  
But that my love should fail Thee in Thy need.  
My Lord! my Life!—my only answer this:  
Thou know'st I love Thee now—forgive my sin!  
Honolulu, March 19th, 1884. G. W. P.

## HOPE, FAITH, LOVE.

(From the German of Schiller.)

There are three lessons I would write  
Three words, as with a burning pen,  
In traces of eternal light  
Upon the hearts of men.  
Have hope. Though clouds environ now,  
And Gladness hides her face in scorn,  
But thou the shadow from thy brow—  
No night but hath its morn.  
Have faith. Where'er thy bark is driven,  
The calm'st disport, the tempest's mirth,  
Know this—God rules the hosts of heaven,  
The inhabitants of earth.  
Have love. Not love alone for one,  
But man, as man, thy brothers call;  
And scatter like the circling sun,  
Thy charities on all.  
Thus grave these letters on thy soul—  
Hope, Faith, and Love—and thou shalt find  
Strength when life's surges rudest roll,  
Light when thou else wert blind.

## THE SANDWICH ISLANDS.

The Washington *National Republican* of Jan 4, publishes a letter from Honolulu in which it is stated that matters are in a very serious condition in the Islands, on account of the unpopularity of Prime Minister Gibson and his Cabinet, through his influence with the King. The correspondent says:—Gibson has become all powerful, and in using his position to advance the interest of Claus Spreckels, one of the

chiefs. The causes of the recent trouble come from a contest between Spreckels and the Government. Chinese laborers are imported into the Kingdom, but by law importations are limited to 20 per month. The importation of these Chinese is profitable, and Government had made a contract with the Pacific Mail Company to bring them, but recently Gibson notified to the Company that he had cancelled the contract and made another with Spreckels for the same service. A mass meeting was held on December 27, to consider this action, and condemnatory resolutions were adopted. A resolution expressing want of confidence in the Cabinet was also passed.

The above appeared in the *Canterbury Times*, N. Z., of the 16th Feb., and is only another instance of how false news spread. The italics are ours, as showing what the correspondent of the *National Republican* knows about this country and its laws.—[Ed. P. C. A.]

## HOW DID THE WORLD EVOLVE ITSELF?

ADDRESS DELIVERED BY SIR EDMUND BECKETT, Q.C., BEFORE THE VICTORIA INSTITUTE OF LONDON.

I am asked—probably on account of my little book "On the Origin of the Laws of Nature"—to write a paper on what may be called "Undesigned Cosmogony," or the production of the world and all that is therein without the "Intelligent Author" that even Hume believed in, though he believed little or no more about Him. I there discussed that alternative to Creation which is commonly called Materialism, or the "potentiality of self-existing matter," or self-existing energy, and automatic Laws of Nature; which all practically come to the same thing, however their advocates may try to evade it—viz.: that the ultimate atoms of Matter resolved for themselves by universal suffrage from the beginning of all things how they would act for ever in all possible circumstances, distributing themselves first into groups of the sixty-three elements, or whatever may be their number, and somehow acquiring the multitude of properties respectively belonging to them.

Laws of nature are only laws of motion for every kind of atom in all possible circumstances; and they differ from the three mathematical "axioms or laws of motion" established by Newton, in that those are necessary "a priori" truths, but the laws of natural motions, or of nature, are statements of our experience, and proper inferences from it; and for anything we could tell "a priori" they might all have been different. That great saying of Sir J. Herschel's should never be forgotten, that a sufficiently clever man shut up by himself might conceivably reason out all mathematical truth up to the highest that will ever be reached; but the cleverest man that ever lived could not divine "a priori" how a lump of sugar would behave when put into a cup of tea. There also must be laws of nature of which we yet know nothing more than that they are wanted to explain some phenomena of which we know no cause. A constant phenomenon can only be regarded as itself a law of nature, until some cause behind it is discovered, which then takes its place. Some physiological phenomena are variable and uncertain, such as the different effects of the same food and medicines on different persons, though they are all doubtless in conformity with some law. The still more precarious phenomena of mesmerism can neither be ignored or got rid of by any rational hypothesis, however often they are tainted with fraud; or of occasional apparitions, and perhaps a few kinds of divination, which are all beyond the reach of any law that is yet known or imagined. All that is quite apart from Miracles, of which I have nothing to say here, especially as I have treated of them in a lately-published S.P.C.K. tract, called "A Review of Hume and Huxley on Miracles."

The argument of the "Origin of Laws of Nature" is, that the only alternatives for cosmogony are: 1—a single Creator who made and maintains the law of nature; and 2—as many creators as the atoms of the universe, all agreeing how they would behave, and always keeping their resolutions; and they must also have had foresight enough to agree on the

laws of nature, or of their respective motions, that would produce all the actual results. As that alternative is too absurd for any rational man consciously to accept, it necessarily follows that between those two the other is the true one, viz.: that there was one Creator; and a Creator omnipotent enough to make all the laws of nature must, "a fortiori," have had the much smaller and approximately human power of calculating or foreseeing their consequences. A power that makes law of action, foreseeing all the consequences, does "ipso facto" design them.

Nobody has ever attempted to show any fallacy in that argument; and if it cannot be refuted, it is conclusive on both points, i.e., that there is a Creator, and that he designed everything, and did not blindly start some laws of nature or forces, and leave them to act as they might, and that we merely have the accidental results which have survived; for I need hardly remind you that so-called accidents play a very large part in the only rival theories of cosmogony that are now in fashion, all going under the name of Evolution of one kind or another.

I now propose to go further, and to take up the question of apparent design at some later stages of the universe, and to see how much of it can be accounted for without a vast deal more of creative action than merely starting some kind of force. Many persons fancy that it is quite enough to call any common growth Evolution, and then "spontaneous evolution," and then take that for a proof that everything can come, and has come, by spontaneous evolution from some unknown kind of self-existing matter, with no properties or qualities: which is all a mass of bad logic and absurdity.

For first, it is a mere perversion of words to call growth Evolution, while it means the increase of some seed or egg without any visible external addition, such as one has to make in order to increase any dead thing. Secondly, it is not true, if it means that the additions to the body are evolved from it as mere changes; for they are added to it by sundry processes, which the writer who is called "the chief apostle of Evolution" pronounces mysterious, and confesses that he is "in the dark" about them, which is an odd way of commending a new philosophy and "unification of all knowledge." Thirdly, whether mysterious or not, each process must have some cause, as much as every other motion in the world. If that cause is a known physical force or attraction, there must still be a prime cause behind it to settle its direction and its intensity, and to make it to continue to act. Calling it spontaneous is simply saying you know nothing about it, and it is evident nonsense to call that an explanation, or to call growth Evolution; for it is in fact attraction of a very peculiar kind, with selection of the particles to be attracted.

And further, if growth of offspring exactly like the parents could properly be called by some such name, that would be no reason for applying it to new growths of a different kind, which the automatic evolutionists really want. Every new organ, or even so small a rudiment of one, is extraordinary at first, and a special cause is wanted to produce, and that is to create it. That cause may be a law of nature beyond our knowledge, but it wanted making and maintaining no less than any other that we do know.

Darwin's theory of "biological evolution" is this, in his own closing words of the *Origin of Species*: "I view all beings, not as special creations, but as lineal descendants of some few which lived long before the first bed of the Cambrian system was deposited. . . . There is grandeur in this view of life, with its several powers having been originally breathed by the Creator into few forms or into one, and while this planet has gone cycling on according to the fixed law of gravity, from so simple a beginning, endless forms most beautifully and most wonderful have been, and are evolved." In short, the ultimate difference between that and the old theory is, that Darwin allows only small changes (which are all no less

And yet I see from Mr. Goldwin Smith's articles on Mr. Leslie Stephen and Herbert Spencer in the *Contemporary Review* of last December, that some philosopher, whom he does not name, has accepted this "pan-atomic" theory as the only logical alternative to a Creator. So far that philosopher is quite right, and it is satisfactory to see it acknowledged.